

Treatment of Tophaceous Deposits in the First Metatarsophalangeal Joints of Both Feet - Part I

Sir,

Gout stones, clinically referred to as tophi, represent crystalline deposits of monosodium urate that accumulate beneath the skin, giving rise to painful, skin-covered nodules.¹ These nodules are commonly localised in the first metatarsophalangeal joints of the lesser toes, fingers, wrists, elbows, and knee joints. In a minority of cases, tophi may also manifest in atypical sites such as the cartilage of the nose, tongue, vocal cords, eyelids, aorta, heart valves, and the myocardium. Within the bony vicinity of the affected joints, tophi can invade bone tissues, leading to bone deformities or damage. Tophi may exhibit considerable variation in size, ranging from as small as a sesame seed to as large as an egg.

Gout is a condition characterised by an elevation of uric acid levels in the bloodstream, which results in the deposition of uric acid crystals within the joints. This process triggers pain, swelling, and an inflammatory reaction in and around the affected joints.² Subsequently, the accumulated uric acid crystals amalgamate to form gout stones,³ a process that is particularly prevalent in peripheral areas of the body where temperatures are lower, such as the fingers, toes, and auricles. Gout stones typically manifest as hard, white, yellow, or pale yellow nodules with a thin, felty surface that disintegrates to discharge a white powdery or pasty substance known as urate crystals.⁴ The development of gout stones is a consequence of disease progression among gout patients, particularly in cases where uric acid levels remain uncontrolled for a prolonged duration without appropriate treatment. The uric acid crystals in gout stones provoke an inflammatory response within the tissues, precipitating joint pain and swelling. Prolonged inflammatory damage may lead to compromised joint and surrounding tissue integrity, resulting in joint deformity and dysfunction. The presence of gout stones serves as an indicator of the patient's condition having advanced to a more severe stage.⁵

A 69-year-old male patient was admitted to the hospital for a 15-day period as a result of experiencing pain and swelling in both feet hindering his ability to walk. Upon physical examination, two prominent swellings were observed in the first metatarsophalangeal joints of both feet, measuring approximately 6×6 cm on the left side and 4×4 cm on the right side. The swellings exhibited an irregular surface (Figure 1A). X-ray imaging revealed a marginally dense mass present at the 1st

metatarsophalangeal joints of both feet. Additionally, bone degradation was observed at the distal end of the 1st metatarsal. With consideration of the patient's medical history, the presence of gout stones was suspected (Figure 1B). Laboratory analyses yielded a uric acid level of 598 µmol/L.

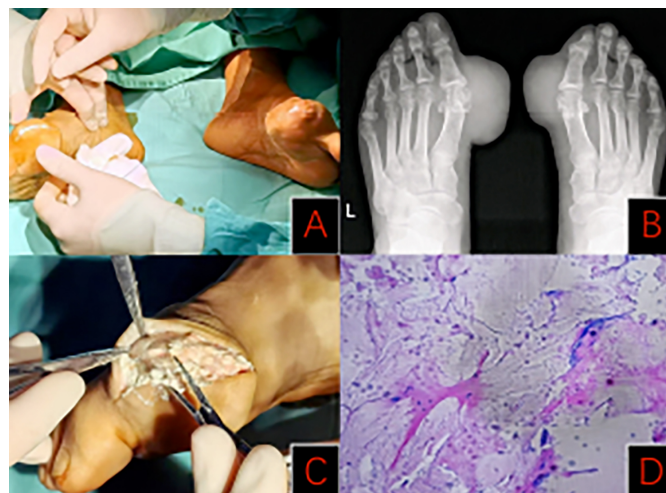


Figure 1: Gouty stones (A) the mass on the left foot measured approximately 6x6 cm and the mass on the right foot measured approximately 4x4 cm. (B) X-ray examination revealed a slightly dense mass at the 1st metatarsophalangeal joints of both feet, accompanied by bone destruction at the distal end of the 1st metatarsal. Given the patient's medical history, gout stones were considered as potential contributors to these observations. (C) Intraoperatively, both the foot mass and the surrounding synovium were excised. (D) Pathological examination confirmed the presence of a gout stone within the swelling.

The patient underwent a bipedal examination and lesion excision under general anaesthesia. A 4 cm incision was made on the mass using a scalpel to separate it from the surrounding tissues, revealing a white tophus-like deposit. The mass was successfully removed intact (Figure 1C), along with the proliferated synovium using an electrocoagulant knife. The excised mass and synovium were sent for pathological examination, which revealed the presence of gouty stones (Figure 1D). Considering the patient's medical history, laboratory and imaging tests, the diagnosis of giant gouty stones with bone destruction in the first metatarsophalangeal joints of both feet was confirmed. The patient's uric acid level was 480 µmol/L one day after the surgery and 420 µmol/L one week post-surgery. Following the procedure, the patient reported a significant relief in pain and discomfort in both feet, indicating the effectiveness of the surgical treatment. Continued follow-up is planned to monitor the patient's progress.

Oral uric acid-lowering medicines alone proved ineffective in this case. Surgical intervention not only alleviated the patient's symptoms but also effectively restored limb function. Postoperative treatment involving a combination of uric acid-lowering medicines, Chinese herbal tonics, and rehabilitation exercises has shown good efficacy.

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COMPETING INTEREST:

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AUTHORS' CONTRIBUTION:

DZ: Contributed to the drafting, revision, and editing process of the manuscript.

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